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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/019,705	05/13/2002	Kari Kalliojarvi	915-414	1802

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EXAMINER

PEREZ, JULIO R

ART UNIT PAPER NUMBER

2617

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/019,705	KALLIOJARVI, KARI	
	Examiner	Art Unit	
	Julio R. Perez	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

Continued Examination Under 37 CFR 1.114

2. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 30, 2005 has been entered.

Response to Arguments

3. Applicant's arguments with respect to claims 1-27 have been considered but are moot in view of the new ground(s) of rejection.

Claim Objections

4. Claim 23 is objected to because of the following informalities: On lines 5, 6, 9, and 12, "the base station" should be "said at least one base station". Appropriate correction is required.
5. Claim 24 is objected to because of the following informalities: On line 10, "from the other of the stations" will be interpreted as "from other stations"; and on line 12, "determined" should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-8, 10-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Wylie et al., US Paten Number 5,974,329, (hereinafter Wylie).

Regarding claim 1, Wylie discloses a method of determining a distance between a transmitting station and a receiving station comprising the steps of: determining a characteristic parameter describing the line-of-sight conditions of the radio propagation environment of the receiving station, wherein the characteristic parameter describes excess path lengths caused by obstacles in the environment by means of one of a number of discrete levels (col. 2, lines 24-63; col. 4, lines 7-10; Figures 1A, 1B, -3, the mobile location is estimated by the measurement of the characteristics of the environment on the coverage of the base stations surrounding the mobile stations, thus, indicating the characteristics of the terrain in relation to the signal spread reaching the mobiles, further indicating the LOS or NLOS with respect to the mobile stations; indeed, indicative of the characteristics of the propagation environment); measuring at least one feature of a signal received from the transmitting station at the receiving station, said feature being such that it can be used for determination of the distance between the

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transmitting station and the receiving station (col. 4, lines 7-10, 39-65, the signal strength from the mobile station may be measured in relation to its position within the different coverage areas; furthermore, the range measurements correspond to power signal measurements); and computing the distance [i.e., range measurement] between the transmitting station and the receiving station using said measured signal feature [i.e., signal strength power] and the characteristic parameter describing the line-of-sight conditions of the receiving station (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31).

Regarding claim 2, Wylie discloses, determining the current geographical location of one of the transmitting stations (col. 3, lines 5-7).

Regarding claim 3, Wylie discloses, further comprising: determining at least one further distance between the transmitting station and at least one further receiving station having a characteristic parameter describing the line-of-sight conditions of the radio propagation environment of the at least one further receiving station (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31, the system provides further information about LOS from other base stations, thus, other characteristic factor, indicating the LOS in the coverage environment); and determining the current geographical location of the transmitting station based on the determined distances between the transmitting station and said at least two receiving stations (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31, thus providing the distance, i.e., the range measurements, between mobile and base stations, and location of the mobile stations).

Regarding claim 4, Wylie discloses, further comprising: determining at least one further distance between the receiving station and at least one further transmitting station having a characteristic parameter describing the line-of-sight conditions of the radio propagation environment of the at least one further transmitting station (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31, the system provides further information about LOS from other base stations, thus, other characteristic factor, indicating the LOS in the coverage environment); and determining the current geographical location of the receiving station based on the determined distances between the receiving station and said at least two transmitting stations (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31, thus providing the distance, i.e., the range measurements, between mobile and base stations, and location of the mobile stations).

Regarding claim 5, Wylie discloses, at least one feature comprises at least travel time of the signal between the transmitting and receiving stations (col. 4, lines 7-10).

Regarding claim 6, Wylie discloses, at least one feature comprises at least signal travel time differences between the transmitting and receiving stations (col. 4, lines 7-10).

Regarding claim 7, Wylie discloses, at least one feature comprises at least strength of the received signal (col. 4, lines 7-10, 39-65).

Regarding claim 8, Wylie discloses, at least one feature comprises the quality of the received signal (col. 4, lines 7-10, 39-65).

Regarding claim 10, Wylie discloses, defining the radio propagation environments for several stations; and classifying the stations in different radio propagation environment classes; wherein the characteristic parameter is based on the class of the station (col. 4, lines 7-10, 39-65).

Regarding claim 11, Wylie discloses, the characteristic parameter is stored and processed in a location service node implemented in a telecommunications system (col. 4, lines 7-10, 39-65).

Regarding claim 12, Wylie discloses, the stations are connected to a mobile telecommunications system, the transmitting station being a mobile station and the receiving station being a base station of the mobile telecommunications system or vice versa (Figure 1A-1B).

Regarding claim 13, Wylie discloses, the determination of the characteristic parameter comprises steps of: determining the current geographical location of at least one of the stations by means which are external to the telecommunications system; and inputting the results of the determination to the telecommunications system (col. 3, lines 5-7).

Regarding claim 14, Wylie discloses, comprising use of a satellite based positioning system for the determination of the current geographical location of at least one of the stations (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67; col. 6, lines 1-10, 26-31; inherently a GPS system provides location information to mobile and base stations as evidenced by the fact that GPS units, (and within base station transceivers), in a mobile system, are located within mobile stations

for providing and facilitating their geographical positions as well as transmitting such positions to respective base stations).

Regarding claim 15, Wylie discloses an arrangement for determining a distance between a transmitting station and a receiving station, comprising: storage means for storing a characteristic parameter describing the line-of-sight conditions of the radio propagation environment of the receiving station, wherein the characteristic parameter describes excess path lengths caused by obstacles in the environment by means of one of a number of discrete levels (col. 2, lines 24-63; col. 4, lines 7-10; Figures 1A, 1B, -3, the mobile location is estimated by the measurement of the characteristics of the environment on the coverage of the base stations surrounding the mobile stations, thus, indicating the characteristics of the terrain in relation to the signal spread reaching the mobiles, further indicating the LOS or NLOS with respect to the mobile stations; indeed, indicative of the characteristics of the propagation environment); measurement means for measuring a feature of a signal transmitted from the transmitting station to the receiving station for determination of the distance between the transmitting station and the receiving station (col. 4, lines 7-10, 39-65, the signal strength from the mobile station may be measured in relation to its position within the different coverage areas; furthermore, the range measurements correspond to power signal measurements); a controller for receiving the outcome of said measurement and for defining the distance between the transmitting station and the receiving station on the basis of the outcome of the measurement and said characteristic parameter (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31).

Regarding claim 16, Wylie discloses, determining the current geographical location of one of the transmitting stations (col. 3, lines 5-7).

Regarding claims 17, 18, Wylie discloses, comprising: at least one further receiving station having a substantially fixed location and provided with a characteristic parameter describing the line-of-sight conditions of the radio propagation environment of said at least one further receiving station (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31, the system provides further information about LOS from other base stations, thus, other characteristic factor, indicating the LOS in the coverage environment); means for measuring a feature of a signal transmitted from the transmitting station to the at least one further receiving station for determination of the distance between the transmitting station and the at least one further receiving station (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31, thus providing the distance, i.e., the range measurements, between mobile and base stations, and location of the mobile stations); wherein the arrangement is such that the outcome of the measurement of the feature of the signal transmitted to the at least one further receiving station is also used when determining the location of the transmitting station (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31, thus providing the distance, i.e., the range measurements, between mobile and base stations, and location of the mobile stations).

Regarding claim 19, Wylie discloses, wherein different radio propagation environments of different stations are classified in different radio propagation

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environment classes and the characteristic parameter is based on the class of the station (col. 4, lines 7-10, 39-65).

Regarding claim 20, Wylie discloses, wherein the feature of the signal is based on one or several of the following: travel time of the signal between the transmitting and receiving stations, signal travel time difference between the transmitting and receiving stations, the strength of the received signal, the quality of the received signal (col. 4, lines 7-10).

Regarding claim 21, Wylie discloses, comprising a mobile telecommunications system, wherein the transmitting station is a mobile station and the receiving station is a base station of the mobile telecommunications system or vice versa (Figure 1A-1B).

Regarding claim 22, Wylie discloses, wherein the receiving station comprises a sector antenna (Figure 1A-1B).

Regarding claim 23, Wylie discloses a location server for use in a telecommunications system for provision of location data of a mobile station having a radio connection with at least one base station of the telecommunications system, comprising: means for receiving measurement data from the telecommunications system concerning a feature of the connection between the mobile station and said at least one base station for determination of the distance between the mobile station and the base station (col. 4, lines 7-10, 39-65, the signal strength from the mobile station may be measured in relation to its position within the different coverage areas; furthermore, the range measurements correspond to power signal measurements); storage means for storing a characteristic parameter describing the line-of-sight

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conditions of the radio propagation environment of said at least one base station, wherein the characteristic parameter describes excess path lengths caused by obstacles in the environment by means of one of a number of discrete levels (col. 2, lines 24-63; col. 4, lines 7-10; Figures 1A, 1B, -3, the mobile location is estimated by the measurement of the characteristics of the environment on the coverage of the base stations surrounding the mobile stations, thus, indicating the characteristics of the terrain in relation to the signal spread reaching the mobiles, further indicating the LOS or NLOS with respect to the mobile stations; indeed, indicative of the characteristics of the propagation environment); control means for defining the distance between the mobile station and the base station on the basis of the received measurement data and said characteristic parameter (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31).

Regarding claim 24, Wylie discloses an arrangement in a telecommunications system for creating and/or updating data concerning the radio propagation environment of a station of the telecommunications system, comprising: a first station (col. 4, lines 7-10, 39-65; Figures 1A-1B); a second station for communicating by radio with the first station (col. 4, lines 7-10, 39-65; Figures 1A-1B); means for defining the current geographical location of the first station by means of a source of location information that is external to the telecommunications system (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31; inherently a GPS system provides location information to mobile and base stations as evidenced by the fact that GPS units, (and within base station transceivers), in a mobile system, are

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located within mobile stations for providing and facilitating their geographical positions as well as transmitting such positions to respective base stations); determining means for determining a feature of a radio signal received by one of the stations from the other of the stations col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31); and calculating means for calculating a parameter describing the line-of-sight conditions of the radio propagation environment by means of the determined current geographical location of the first station and the said determined feature, wherein the parameter describes excess path lengths caused by obstacles in the environment by means of one of a number of discrete levels (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 7-10, 39-67).

Regarding claim 25, Wylie discloses, comprising means for receiving signals from a satellite based positioning system (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 39-67; col. 5, lines 1-4, 66-67-col. 6, lines 1-10, 26-31; inherently a GPS system provides location information to mobile and base stations as evidenced by the fact that GPS units, (and within base station transceivers), in a mobile system, are located within mobile stations for providing and facilitating their geographical positions as well as transmitting such positions to respective base stations).

Regarding claim 26, Wylie discloses, comprising means for determining if an update of the data concerning the radio propagation environment is required (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 7-10, 39-67).

Regarding claim 27, Wylie discloses, wherein the first station comprises a portable device comprising the determining means for determining the feature of the radio signal (col. 2, lines 64-67; col. 3, lines 1-16; col. 4, lines 7-10, 39-67).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 9, is rejected under 35 U.S.C. 103(a) as being unpatentable over Wylie in view of Hilsenrath et al., 6,026,304 (hereinafter Hilsenrath).

Regarding claim 9, Wylie does not explicitly disclose, comprising use of a weighted least square method for the determination of distances between the receiving and transmitting stations, wherein the used weighting matrix is the inverse of an error covariance matrix.

However, in a similar field of endeavor, Hilsenrath discloses a method and apparatus in a wireless communication system that accurately determines the transmitter's location (col. 6, lines 6-34-col. 7, lines 9-35-col. 8, lines 15-53).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Wylie with the teachings of Hilsenrath for the purpose of having an entity that would efficiently and accurately locate the mobile station in a coverage area.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Julio R. Perez whose telephone number is (571) 272-7846. The examiner can normally be reached on 10:30 - 6:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph H. Feild can be reached on (571) 272- 4090. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Julio R Perez
Examiner
Art Unit 2617

4/10/06


ERIKA A. GAFF
PRIMARY EXAMINER